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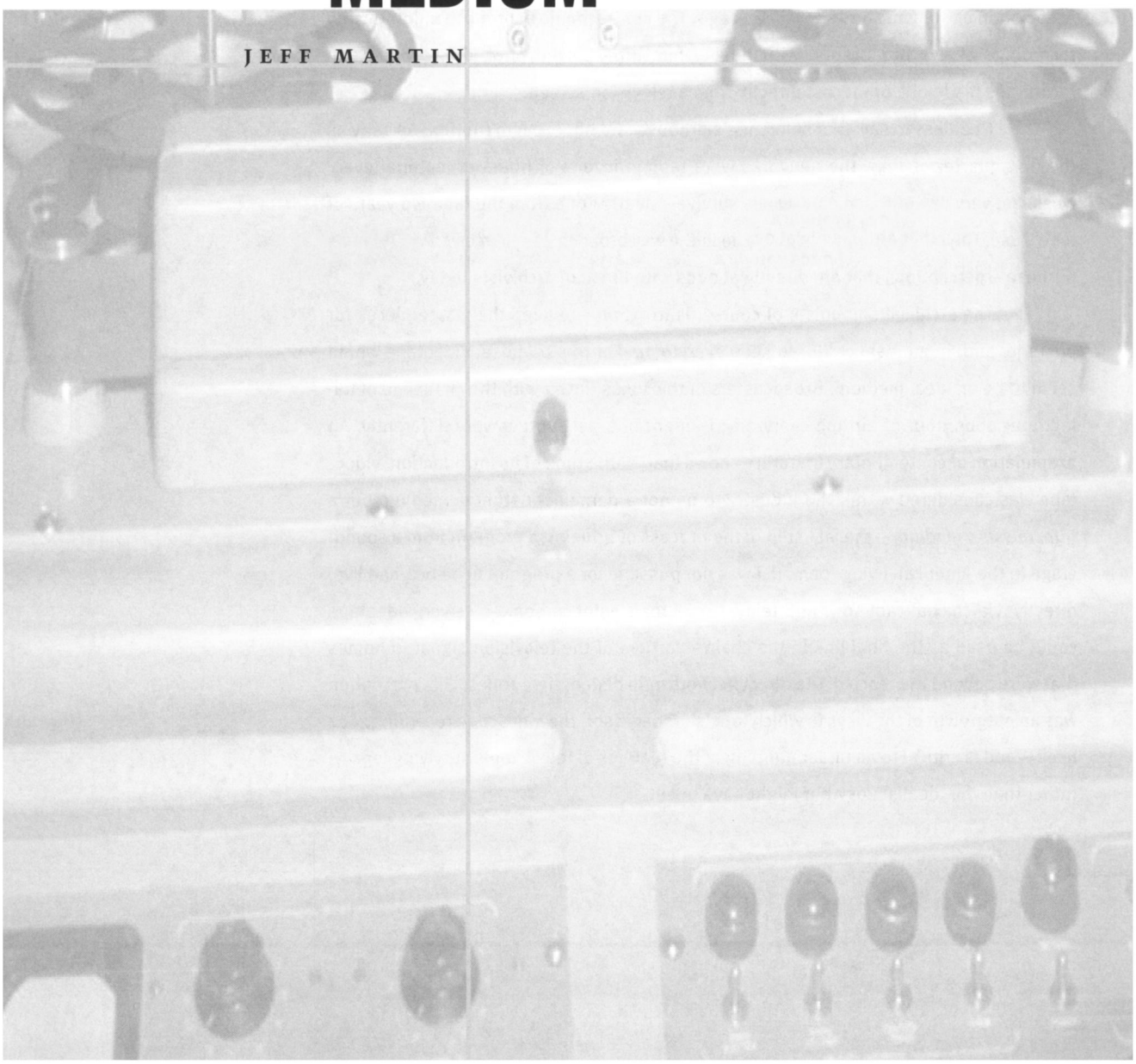
THE DAWN OF TAPE: TRANSMISSION DEVICE AS PRESERVATION MEDIUM

JEFF MARTIN



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INTRODUCTION

In late April 1956, an anonymous columnist in the trade journal *Television Digest* made a plea especially resonant today. Noting the ephemeral nature of the medium he covered, the writer asked, "Why must a TV masterpiece die after a single performance?" He noted with approval a suggestion by a Philadelphia TV critic to create a "TV Hall of Fame," an institution that "would be along the lines of N.Y. Museum of Modern Art's collection of historic movies—with the best TV programs preserved on electronic tape, if possible."[1]

The author was writing at a particularly fortuitous moment. Just two weeks earlier, the Ampex Corporation had demonstrated the first practical video tape recording system—the two-inch reel-to-reel format known popularly as "quad" tape—at the National Association of Broadcasters show in Chicago. The new technology promised high-quality recordings of live broadcasts, with fidelity far surpassing that of kinescopes—film recordings made of a broadcast directly from a television screen.

Needless to say, that columnist's proposal did not come to fruition. As early as the first quarter of 1957, the networks were taping dozens of hours of material every week. Yet very few of those early tapes survive—nearly none from the first two years of tape's use. The reasons for this scarcity lie in the way broadcasters perceived videotape's purpose—perceptions that are directly at odds with those of archivists today.

The archivist's impulse, of course, is to *retain*—to keep the masterpieces for posterity and, in an ideal world, to keep *everything*. For this purpose, videotape would seem to be an ideal medium. Broadcasters of the 1950s, faced with the challenge of filling hour upon hour of airtime every day, thought of tape's virtues very differently. An examination of contemporary literature shows that, at the time of its introduction, videotape was considered within the industry to be not a permanent storage medium but a *transmission medium*—the last step in the process of bringing a program from a soundstage to the American living room. If it was not possible for a program to be beamed live, directly, via coaxial cable or radio relay, from broadcaster to home receiver, videotape could be used as the final link in the chain—carriers of the television signal to homes that were beyond the reach of the direct network or in distant time zones. This perception was an outgrowth of the ways in which tape's predecessor, the kinescope recording, was used—and is critical to an understanding of the realities of television's surviving legacy, rather than the idealism of what might have been.

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LIFE BEFORE TAPE

Attempts to record television programs are as old as television itself. British TV pioneer John Logie Baird developed a system he called "Phonovision" in the very late 1920s. It recorded thirty-line mechanical TV images on phonograph records.[2] Recording electronic television programming on film was tried in America in the late 1930s, but was plagued by distortion resulting from the different frame rates of television and film (twenty-four versus thirty frames per second.)[3] An early attempt involved modifying a camera to run at fifteen frames per second, which allowed for the recording of every other frame of video—but the resulting film could not be viewed using a standard projector, and it could not be rebroadcast due to the flicker caused by the missing alternate frames.

An improved video-to-film process was introduced by DuMont Laboratories in 1947. The DuMont camera, which was put into commercial production by Kodak, used 16mm stock because of its lower cost and because fire laws at the time often restricted use of 35mm film to fireproof rooms, regardless of whether nitrate or safety stock was employed. DuMont engineers overcame the frame-rate differential by synchronizing the film camera so that it photographed twenty-four out of every thirty video frames (each video frame being made up of a cycle of two video fields):

> With the camera and television tube synchronized, film is exposed for one complete tube cycle . . . during the first quarter of the next cycle, the film is advanced one frame. Exposure takes place for the remaining three quarters of this cycle and the first quarter of the next cycle, after which the film is again advanced.[4]

Kinescope recording on film had several advantages. Prints could be viewed via direct projection on any standard 16mm sound projector and could be rebroadcast via near-ubiquitous 16mm film chains. Negative or positive stock could be used for filming or for broadcast—negative kinescopes could be broadcast as positives merely by switching the polarity on the film chain being used. Though the first cameras were 16mm, 35mm cameras could be used as well.

DuMont called the process "Teletranscription," a name that never stuck. "Kinescope" was in fact the technical term for the television picture tube, and originally, films of television programs were (accurately) called "kinescope recordings." By the

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mid-1950s, though, "kinescope" was the most common shorthand term for film recordings of television programs.[5]

In the late 1940s and early 1950s, before television stations nationwide were linked by coaxial cable or other means of live transmission, kinescopes were critical to the growth of television networks. Programs were seen live in those markets with stations on the cable; after the broadcast, kinescopes were shipped by air to outlying stations for delayed broadcast—carriers of programming in the most literal sense.

In certain cases, more people saw a delayed kinescope than a live show: in 1951, for example, the Victor Borge show was seen live on ten stations, and on kinescope on twenty-two. Kinescopes were also used in cities that had only one or two stations to broadcast programming from all four operating networks: a given station might present shows from one network live and present shows from the other networks at different hours via kinescope.[6] Perhaps the most extensive use of kinescopes as substitutes for network feeds was by the National Educational Television and Radio Center, the predecessor to National Educational Television, which began in the late 1950s by creating a "network" that consisted entirely of kinescopes shipped to its member stations.[7] In the use of recorded television to serve as the final link in the transmission process, the television networks were simply following the practice of their radio predecessors, "which, in spite of ample telephone lines, use[d] the 'electrical transcription' as a transmission medium."[8]

Additional uses for film kinescopes were given in various articles discussing the technique, including a 1948 article by Thomas Goldsmith and Harry Milholland of DuMont Labs: "Transcriptions also serve many other purposes, such as promotional advertising, as aids to criticism of program techniques and content, and as legal records including documentation of station operation for the records of the FCC."[9] Conspicuous by its absence—to today's archivist, at least—is the idea of using kinescope recordings to build an archive, or even a "library," of television broadcasts for future use, to say nothing of posterity.

Once a coast-to-coast coaxial network was completed in 1951, kinescopes became more, not less, important. They were essential to the practice of time shifting: the recording of programs so that they could be broadcast live in the Eastern Time Zone and three hours later, from the kinescope, in the Pacific Time Zone.

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NBC's operations demonstrate the complications of the format. When a live program went on the air in the east, it was transmitted to the West Coast via coaxial cable and filmed by two cameras at NBC's Hollywood studio. The network used a 35mm silent camera with a three-thousand-foot magazine that allowed for thirty-three minutes of continuous filming. A separate 16mm magnetic soundtrack served as the primary audio recording; a 16mm single-system optical-sound camera was used as a video and audio backup. Every half hour, the magazines were removed and the film unloaded in the darkroom. The 35mm film was messengered to a lab, hastily developed, then rushed back to NBC; the 16mm was developed in house. When West Coast airtime came, the 35mm negative and 16mm fullcoat were synched and threaded, as was the 16mm single-system negative. At airtime, both were run; in case something went wrong with the higher-quality 35mm, engineers could switch to the 16mm backup.[10] *The Journal of the Society of Motion Picture and Television Engineers* described NBC's time-shifting operations in 1953: "Although this three-hour time zone delay operation may sound very precarious and nerve wracking, it has been in daily use for one year with very few errors and with picture and sound quality rivaling that of many live shows."[11]

The numbers related to kinescope production are staggering. As early as May 1949, television networks were using 250,000 feet of film every week in New York City alone, according to one engineer at RCA Victor.[12] By 1954, TV networks were using more film on a weekly basis than all the Hollywood studios put together.[13]

And what happened to these hundreds of thousands of feet of film? As one CBS vice president said at the time, "the practice has been to shoot a full hour of 35mm film for each hour of delayed program, play it back once, and then discard the film."[14] Once used, the kinescope prints were bought back by Eastman Kodak as "salvage," at seven cents per pound.[15]

Despite their widespread use, kinescopes were recognized even at the time as having visual quality that was inferior to live broadcasts or film-original programming, and more importantly from an archivist's point of view, were not seen as a viable medium for long-term use or reuse. Desi Arnaz's famous decision to shoot *I Love Lucy* on 35mm film was based on his knowledge that the poor quality of kinescope recordings would make the show's rerun value nil.[16] In *Life* magazine's pithy phrase, kinescopes were "costly, complicated, and disappointing."[17]

Moreover, the so-called hot kine process was only workable for black-and-white film. Color film took too long to process—meaning that live colorcasts were regularly seen only in black and white on the West Coast, a particular problem for color-TV pioneer

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April 16, 1956: William Lodge, CBS engineering vice president, and George Long, of the Ampex Corporation, pose with videotape used at the first demonstration of Ampex's videotape recorder at the National Association of Radio and Television Broadcasters convention in Chicago (copyright Bettmann/CORBIS; used with permission).

NBC. In an attempt to overcome this problem, NBC developed a complex lenticular film kinescope system in which tiny lenses were embedded in the surface of the film, allowing the three color signals—red, green, and blue—to be recorded individually then re-reconstituted for broadcast though a set of special filters.[18] Yet, just as this technique was being introduced, another technology was coming on-line that would make kinescopes of any description obsolete.

DAWN OF THE VIDEOTAPE ERA

In the February 1950 issue of *Electronics*, Howard Chinn, chief engineer at CBS, was quoted as saying, "The television film transcription is a very complicated device for stor-

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ing a video signal. It involves transferring the signal to a phosphor image, to a negative film image, to a positive film image, to a mosaic image, and back to the video waveform. There are too many electrical, chemical and optical processes involved, too many potential sources of distortion. And the TV transcriptions of the day show it." His suggestion: recording the signal on magnetic tape. "Such a scheme might use up a lot of tape, but it might well be worth it, especially since the tape could be erased and re-used almost indefinitely."[19]

It would indeed use a lot of tape—at least in the beginning. Early experiments ran tape past the record head at very high rates of speed. For example, in November 1951, Bing Crosby Enterprises demonstrated for the press a prototype videotape recorder. The machine used regular quarter-inch audiotape running at 100 inches per second but produced a picture that was "blurred and indistinct."[20] In 1953, RCA demonstrated its own experimental recorder using tape that ran at 320 inches per second.[21] In 1955, Crosby Enterprises demonstrated a prototype running at 180 inches per second, on which a fourteen-inch reel of tape was capable of recording only about 8 minutes of programming.[22]

An RCA competitor, the Ampex Corporation of Redwood City, California, began work on its videotape recorder in 1951. Over the course of the next five years, including several hiatuses during which the project lay dormant, the Ampex team—Charles Ginsburg, Charles Anderson, Ray Dolby, Shelby Henderson, Alex Maxey, and R. Fred Pfost—refined their machine through an arduous development process. Ampex's breakthrough was to shift from a fast-moving tape to fast-moving *heads*—four to be precise, which rotated at 14,000 revolutions per minute, recording (and later playing back) program information onto a two-inch wide tape that moved past the head assembly at a stately fifteen inches per second. (The four heads led to the designation "quadruplex" videotape—hence the commonly used term "quad" tape.)

After a successful in-house demonstration in February 1956, Ampex executives decided to introduce their recorder at the annual CBS affiliates meeting in Chicago, on April 14. The machine could then be displayed for the rest of the week to television executives attending the National Association of Radio and Television Broadcasters convention, which was being held there as well. A simultaneous showing at Ampex's California headquarters was also scheduled.[23]

Thousands of man-hours of refinement work followed. But after tests in Chicago, the night before the debut, William Lodge, the engineering vice president at CBS who was co-coordinating the affiliates meeting, declared that he was not satisfied with the picture the engineers were getting. Ampex's team decided the problem lay in the tape.

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The first commercially available videotape, sold by 3M starting in July 1957, at a cost of $306 per reel (courtesy 3M Corporation).

They placed an emergency call to the chief physicist at Minnesota Mining and Manufacturing—better known as 3M, makers of Scotch brand audiotape—hoping the company would be able to get them acceptable quality videotape for the next days' showing. Though they'd never produced tape for Ampex before, and indeed, had never seen the prototype recorder, 3M's men stayed up all night, and by six AM had what they hoped were better samples. The new tapes (ten minutes total) were rushed to the Minneapolis airport and passed to a Chicago-bound airliner. The pilot was told that it was medicine needed urgently by a "doctor" on board, who was in fact an Ampex employee.[24]

Later that same morning, at 10:30 AM, two hundred CBS network officials gathered in the Normandy Room of the Conrad Hilton Hotel.[25] A camera was trained on the podium, and monitors around the room displayed the speech given by engineering vice president Lodge, ostensibly so it could be clearly seen by everyone in the room. At its close, Lodge said, "Now let's see what Ampex has for us." After a pause, his speech began to play back on the monitors, looking exactly as it had live just moments before. A curtain parted, revealing the Ampex machine and the engineers needed to run it.[26] One of the attendees recalled the meeting this way:

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> Most of us were much more anxious to get back to what we considered the most pressing business at hand—talk of a potential recession that kept cropping up stubbornly, and fall program plans to stave off NBC and ABC. Well, the first thing we knew, after a brief introduction from Bill, we were looking at pictures of ourselves on the monitors not only taken just seconds before, but of a quality that was hard to realize was actually electronically duplicated and not "live." It took a few seconds before we realized the significance of what we had seen, and then, for all the world like a football crowd cheering Doak Walker or Bobby Layne trotting off the field after the winning touchdown, the entire audience rose to its feet and applauded spontaneously.[27]

For the next five days, the machine was demonstrated every fifteen minutes to NARTB convention attendees, playing back shows taped from the local CBS affiliate, WBBM-TV.[28] One writer would describe the introduction as "a bombshell: the performance was sensational, exciting, and satisfying."[29] The story made a splash in the trade press and mainstream media alike—including the front page of the next morning's *New York Times*. "Little Ampex Steals Show from Electronics Giants" was the headline in *Broadcasting-Telecasting*.[30] "Scarcely bigger than an office desk," said an impressed *Life* magazine of the Ampex machine.[31] Perhaps the only dissenting voice came from *Electronics*, which ran an article in July headlined "Bright Future Seen for Kinescope Recorders," surely the trade-magazine equivalent of "Dewey Defeats Truman."[32]

Ampex seems to have been unprepared for the ecstatic response the machines generated. Originally, the company planned to make the prototypes available to government agencies for testing and then release commercial sometime in 1957. In-house analysis estimated that Ampex might sell a total of thirty machines by 1960.[33] Within four *days*, the company announced that it had sold seventy-three machines,

sales that totaled $3,800,000[34] (this at a time when the company's total annual sales were $18,737,000.)[35] CBS and NBC both ordered three; affiliates from Havana to Twin Falls committed to purchase or placed orders.[36] From then on, things moved fast.

On November 30 of that year, just seven months after that first public demonstration, came the first-ever broadcast use of videotape. After several weeks of tests, and backed up by kinescopes on 16mm and 35mm in case the new machine failed, CBS videotaped its fifteen-minute nightly program *Douglas Edwards and the News*. The network

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then rebroadcast the show to the West Coast from that tape. By all accounts, the taping went extremely well. Videotape quickly became an integral part of the CBS routine, as the network gradually went from fifteen-minute shows, to thirty-minute shows, then to hour-long and ninety-minute shows.[37] Among the programs taped were episodes of *Arthur Godfrey's Talent Scouts, See It Now* with Edward R. Murrow,[38] *Playhouse 90,* and the Rodgers and Hammerstein musical version of *Cinderella* starring Julie Andrews.[39]

In mid-December 1956, the first NBC tape recorder arrived.[40] In January 1957, that network undertook an ambitious slate of videotaped programs. On a daily basis, *Today, Home, Truth or Consequences, News Caravan,* and *Tonight* were taped for time shifting.[41]

At President Eisenhower's inauguration on January 21, 1957, network use of videotape to almost immediately replay the oath of office was described as "startling" by *The Washington Post and Times Herald.*[42] In February, *The New York Times* gave a tally of eighteen hours and forty-five minutes of taped programming per week on NBC, and one hour and forty-five minutes on CBS.[43] By summer 1957, CBS was up to forty programs a week.[44] The last to fall in line, ABC installed three machines in April 1957, and immediately predicted a savings of $10,000 per week in kinescope costs. Ampex competitor RCA demonstrated its own two-inch quad videotape recorder in October of that year—a machine that was, to the relief of the television industry, compatible with the existing Ampex machines.[45]

By April 1958, NBC had replaced its West Coast kinescope operations with an all-videotape system for time shifting. Eight Ampex and four RCA machines recorded programming in half-hour shifts, rewound the tapes, cued them up, and replayed them at the appropriate later hour—all controlled automatically. Though these machines were by no means foolproof, and required a great deal of attention and adjustment, compared to kinescope operations, they practically ran themselves.

PREDICTIONS AND REALITIES OF EARLY VIDEOTAPE

In the beginning, videotape had one specific purpose, as described in a report generated by the National Educational Radio and Television Center: "Ampex officials state that their recorder was primarily designed to solve the problem of delaying Eastern network programs for screening to West Coast audiences."[46] In a 1992 interview, Ampex executive Martin Salter stated: "It was very clear in the United States that there was only one seen application of the tape recorder and that was time-delay. To be able to have something at the same local time, on the East Coast, on the Mid and on the West Coast, without having to run the program three times or record on film."[47]

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Yet shortly after videotape's introduction, magazines and newspapers began to speculate on the implications of this new technology, using all the gee-whiz, *Popular Science* language of the era. Many of their predictions were surprisingly prescient:

> With the television set of the future it might be possible for a house-wife to pick up a new tape movie at the supermarket or drug store and then play it back for the family on their home television screen.[48]
>
> I shouldn't be at all surprised if all well-to-do little boys had their own little tape machines to record the Lone Ranger on and play it back for you at breakfast, a possibility that I'm sure will enchant all parents.[49]
>
> [A]n electronic camera will take motion pictures of your family and friends on a magnetic tape which you will then be able to play back immediately through your television set.[50]
>
> In theory, a new hit film such as "Around the World in 80 Days" could be bought at a newsstand or drug store and then made part of a viewers' permanent television library, much in the manner as many persons now collect long-playing records. What such a system might mean to all branches of show business could be on the fairly revolutionary side.[51]

And by 1959, tape had indeed become an exciting new tool for program production. A book published by 3M in October of that year, *The Changing Picture in Video Tape for 1959–1960,* offers a snapshot of this pivotal time, from the viewpoint of the company that still maintained a corner on the market for tape stock. The book spelled out videotape's two chief virtues in capital letters: "TAPED TV LOOKS LIVE, WHEREAS FILMED TV LOOKS FILMED," and "TAPE CAN BE PLAYED BACK IMMEDIATELY, ERASED, RE-USED, EDITED." The book went on to explain the kinds of uses to which tape could be put, and the benefits it offered to broadcasters: time lapses, dissolves, and special effects were suddenly possible without expensive optical film effects. It allowed for immediate review of performances and, if necessary, retakes (the book emphasized its use in the production of commercials). It could be used in mobile units for remote shoots. It could be used to schedule productions at times convenient for actors, rather than at broadcast time.

It could also serve as the physical carrier of networked programming: as it had with kinescopes, the National Educational Television and Radio Center used the new technology as a substitute for the network of coaxial cables that it could not afford. In 1959,

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a Ford Foundation grant allowed the center to purchase forty-five videotape recorders for the dissemination of programming—using this recording medium as a transmission device, and creating what was called at the time "the world's first video tape network."[52]

But there was one thing that reporters (and the engineers and executives they interviewed) didn't discuss: videotape as a medium for long-term historical record keeping. The technology was seen as providing a clear and tangible benefit *right now,* not for the future. Just about the only article from that time to mention long-term retention of programming is, today, almost poignant in its wrongheadedness: "Another thing about tape is that it should last indefinitely, theoretically," wrote John Crosby in the *Washington Post and Times Herald.* "Film shrinks and the pictures distort after a while as anyone who has ever seen any old films on television knows. Many historic events can be preserved far better than they ever were before tape."[53] In practice, this preservationist impulse was almost never acted upon.

There was, first of all, a purely monetary factor at work in the disappearance of early tape material. Many news articles at the time made a great deal of the fact that the new videotape recorder would cut costs—tape was cheaper than film. In 1958, the approximate figures were: $110–$120 for an hour of kinescope, $300 for an hour of tape.[54] How did tape become cheaper? Reuse. A daily program might have one reel of tape to be used again and again each day until it wore out. With a hundred passes over a tape—common even when the supply of stock became steady—tape suddenly cost a mere $3 per hour. As Jim Lindner has written, "the carrier was perceived to be more valuable than the information on it."[55]

Another force working against videotape as a medium for long-term retention arose from technical issues of the time. For one, the earliest videotape recorders put into use by the networks were, in fact, prototypes. As such, their hand-built record and playback heads were unique, and not compatible with one another—a tape recorded on one machine could only be played back on that machine. If a show had to be held for a long time—say, five weeks, when Arthur Godfrey went on vacation—CBS stored the heads with the tapes and hoped for the best.[56]

Yet another critical factor in the disappearance of the earliest television tape material lay in the tape itself. From the start, two-inch quad tape proved very difficult to manufacture. "The establishment of sources of supply for video tape has been a bit of a problem—to put it mildly," wrote CBS's Howard Chinn in summer 1957.[57] In addition to requiring much higher tolerances than audiotape, videotape was subjected to much greater physical stress. The video heads that rotated at more than 14,000 revolutions per minute, with pressure on the tape of approximately a thousand pounds per square inch,

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tended to remove small amounts of the binder that held the oxide particles to the tape. If enough of this binder built up on the drum on which the heads were mounted, the tape could be cut in half as it moved past.[58]

Moreover, tiny imperfections, scratches, or bits of dirt embedded in the tape's surface—imperfections that might be inaudible on an audiotape—resulted in noticeable onscreen dropouts, a problem commonly remarked on by commentators watching early tape demonstrations.[59] As 3M pointed out, a reel of videotape "has an area as large as a tennis court, while the imperfections being looked for are many times smaller than a grain of sand."[60]

Broadcasters in the late 1950s, of course, had a very different approach to the question of a tape's useful life. The operative term was not, as it is today, longevity and stability, but *durability*—not the question of whether a tape could survive decades on the shelf but whether it could survive multiple passes through the recorder without an unacceptable loss of quality, a loss perceived by deterioration visible to the home viewer.

At first, only 3M made tape, under the Scotch brand name. And in the beginning, the supply situation was critical. In April 1957, with videotape in daily use at two networks, 3M had managed to manufacture a grand total of just *fifty* workable two-inch tapes. By August, they had created another hundred. So difficult was the process that one batch of a hundred new tapes resulted in only three usable ones.[61] With such large amounts of defective stock around, one way to be sure you were using a good tape was to use one that had successfully recorded a program already—a practical incentive to the destruction of recorded material.

The reality of the situation was this: a machine had been created that could save the networks enormous amounts of money and manpower, while at the same time giving the home viewer a much higher-quality picture. The only thing standing in the way was a shortage of media.

It wasn't just that the networks *could* tape over programs—in the early years, they often *had* to, if they wanted to take advantage of what videotape had to offer. The very quality of videotape that can make today's archivists despair—its reusability—was perhaps its chief virtue to early users.

They did not have to worry about what to *do* with ever-increasing stockpiles of programming recorded for its single planned rebroadcast: problems of shipping, space, and

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storage costs were wiped away with a few moments on the bulk eraser. With tape, a month's worth of time-shifted daily programs took up no more space than a day's worth: one tape, used daily, could hold them all.

A succinct expression on how the meaning of "saving" videotape has changed can be seen in a document generated by National Educational Television, and distributed inside the cases it used to ship tapes to its affiliates. Giving guidelines for how to handle videotape, it gave tips on proper rewinding, starting and stopping, packing for shipping, and so on. The capitalized concluding line explained why all this fuss was necessary: "preserving" the tape not for posterity, but for immediate reuse as a broadcasting tool: "REMEMBER: THE TAPE YOU SAVE WILL BE BACK AGAIN WITH ANOTHER PROGRAM FROM NET." Today, the tapes that were handled by these guidelines have outlived their original purpose—now holding only the last in the long series of programs they carried during their lives, when videotape was not for the long term, but only for the *now*.

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APPENDIX

Surviving Early Videotapes: A Sample

This paper began as an attempt to compile a videography of the earliest surviving videotape materials. My methods were straightforward: contacting archives via listings in *Footage* or on footage.net, Web searches, phone calls to friends and acquaintances at various archives, and a posting on the AMIA-L listserv.

The resulting list is by no means complete. First, archives haven't always made their records searchable by format. Second, the search was complicated by the fact that the vast majority of this material is held by networks or corporations that are very mindful of the bottom line and not able to devote precious time or resources to a request for information for mere "research," when more pressing day-to-day needs must take precedence.

Finding out the *why* of surviving early videotapes was as difficult as finding out which programs still exist. One clear story behind a tape's survival comes with the story

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of NBC's "An Evening with Fred Astaire," broadcast in October 1958. The color show earned rave reviews, nine Emmys, and a Peabody Award.[62] Astaire, also the show's producer, held onto the videotapes himself rather than allow them to be reused. These were later uncovered in the archives of MCA, to whom Astaire had sold the programs, and preserved by UCLA in 1988.[63] Yet NBC had been using color tape since the February 19, 1958, telecast of "Kraft Theater"[64]—a broadcast that does not appear to exist any longer.

The earliest case I was able to document in which concern for posterity resulted in the survival of an early tape is that of the opening ceremonies at NBC's affiliate in Washington, DC. Because President Eisenhower was on hand, appearing live in color from Washington, DC, for the first time, this event was deemed historically significant enough by NBC that copies of the tape were sent to the Library of Congress and the White House.[65]

This listing of extant videotape materials is clearly a work in progress. Major sources of material that remain unrepresented include network entertainment and news divisions. Significant material may also be held by smaller production companies active in the late 1950s (i.e., Frank Sinatra's Bristol Productions), affiliates, or even the corporate archives of sponsors.

NOTES

1. J. L. Boon, W. Feldman, and J. Stoiber, "Television Recording Camera," *Journal of the Society of Motion Picture and Television Engineers,* August 1948, 117.

2. Donald F. McLean, *Restoring Baird's Image* (London: The Institution of Electrical Engineers, 2000).

3. Albert Abramson, *The History of Television, 1942 to 2000,* (Jefferson, NC: McFarland and Company, 2003), 24.

4. Ibid.

5. Ibid.; Thomas T. Goldsmith and Harry Milholland, "Television Transcription by Motion Picture Film," *Journal of the Society of Motion Picture and Television Engineers,* August 1948, 107. As Abramson pointed out in his 1955 book *Electronic Motion Pictures: A History of the Television Camera* ([Berkeley: University of California Press, 1955], 126), the term "Kinegraph" would actually be more accurate.

6. Val Adams, "TV Network on Film," *New York Times,* July 27, 1951, B3.

7. Laurence Jarvik, *PBS: Behind the Screen* (Rocklin, CA: Prima Publishing, 1996), 11.

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9. Thomas T. Goldsmith and Harry Milholland, "Television Transcriptions," *Electronics,* October 1948, 68.

10. Ralph E. Lovell, "Time-Zone Delay of Television Programs by Kinescope Recording," *Journal of the Society of Motion Picture and Television Engineers,* March 1953, 235.

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Table 1. Videotapes 1956–1959 in American Archives

Title	*Air (Production) Date*	*Network*	*Color?*	*Type*	*Source/Location*	*Notes*
The Edsel Show	10/13/57	CBS	B/W	Entertainment Special	CBS	
[Dedication day—NBC Washington studios dedication ceremony]	5/28/58	NBC	B/W and color	News/Pub. Affairs	Eisenhower Presidential Library, UCLA	B/W and color
An Evening with Fred Astaire	10/17/58	NBC	Color	Entertainment Special	UCLA	First color TV show broadcast from tape
The Dinah Shore Chevy Show	(11/9/58)	NBC	Color	Entertainment Series	UCLA	Per UCLA: airdate 5/3/59
Milton Berle Starring in the Kraft Music Hall	11/19/58	NBC	Color	Entertainment Series	UCLA	
Playhouse 90: "The Nutcracker"	12/25/58	CBS	Color	Entertainment Special	UCLA	First CBS colorcast from tape
Aaron Sopher's Baltimore	1958	WJZ, Baltimore	B/W	News/Public Affairs	UGA/Peabody Archives	Airdate not known
Milton Berle Starring in the Kraft Music Hall	1/14/59	NBC	B/W	Entertainment Series	UCLA	B/W tape of color program
Bishop Sheen's Program: Divine Sense of Humor	3/2/59	Syndicated	B/W	Religious	UCLA	
Some of Manie's Friends	3/3/59	NBC	Color	Entertainment Special	NBC	
The Bishop Sheen Program: Teenagers	3/12/59	Syndicated	B/W	Religious	UCLA	
Milton Berle Starring in the Kraft Music Hall	3/18/59	NBC	Color	Entertainment Series	UCLA	
College Bowl	3/29/59	CBS	B/W	Game Show	UCLA	
The Dinah Shore Chevy Show	4/5/59	NBC	Color	Entertainment Series	UCLA	
The Mike Wallace Interview: Rube Goldberg	(4/9/59)	Syndicated	B/W	Talk	UCLA	
The Ford Show: "The Mikado"	4/16/59	NBC	Color	Entertainment Special	UCLA	
The Mike Wallace Interview: Clyde Beatty	(4/9/59)	Syndicated	B/W	Talk	UCLA	

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Title	Air (Production) Date	Network	Color?	Type	Source/Location	Notes
[Outtakes; *Pontiac Star Parade: The Gene Kelly Show*]	(4/16/59)	NBC	Color	Entertainment Special	UCLA	From UCLA: "Gene Kelly dances; Carl Sandburg sings and plays the guitar. Includes six takes. This number was not included in the final broadcast."
The U.S. Steel Hour: Little Tin God	4/22/59	CBS	B/W	Entertainment Series	UCLA	Record date: April 17, 1959
The Mike Wallace Interview: Miyoshi Umeki	(4/20/59)	Syndicated	B/W	Talk	UCLA	
Pontiac Star Parade: The Gene Kelly Show	4/24/59	NBC	Color	Entertainment Special	UCLA	
One Night Stand: Woody Herman	(5/7/59)	Syndicated	B/W	Entertainment Series	UCLA	
One Night Stand: Portrait of Della Reese	(5/7/59)	Syndicated	B/W	Entertainment Series	UCLA	
On the Go: Children's Hospital	(5/12/59)	KTLA, Los Angeles	B/W	News/Public Affairs	UCLA	
Milton Berle Starring in the Kraft Music Hall	5/13/59	NBC	Color	Entertainment Series	UCLA	
On the Go: Reiss-Davis Clinic	(5/25/59)	KTLA, Los Angeles	B/W	News/Public Affairs	UCLA	
On the Go: Santa Monica Roller Rink	(5/29/59)	KTLA, Los Angeles	B/W	News/Public Affairs	UCLA	
The Dinah Shore Chevy Show	5/31/59	NBC	Color	Entertainment Series	UCLA	
On the Go: Ash Grove Coffee House	(6/25/59)	KTLA, Los Angeles	B/W	News/Public Affairs	UCLA	
On the Go: Watts Tower	(6/26/59)	KTLA, Los Angeles	B/W	News/Public Affairs	UCLA	
[Richard M. Nixon and Nikita Khrushchev: the "Kitchen Debate" or Sokolniki Summit]	7/24/59	Ampex Corp./NBC	B/W and Color	Other (raw footage)	UCLA, LOC, NBC	
The Dinah Shore Chevy Show	10/4/59	NBC	Color	Entertainment Series	UCLA	

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Table 1. Videotapes 1956–1959 in American Archives *(continued)*

Title	*Air (Production) Date*	*Network*	*Color?*	*Type*	*Source/Location*	*Notes*
Play of the Week: "Medea"	10/12/59	Syndicated	B/W	Entertainment Series	UCLA	
Play of the Week: "The Power and the Glory"	10/19/59	Syndicated	B/W	Entertainment Series	UCLA	
Play of the Week: "Burning Bright"	10/26/59	Syndicated	B/W	Entertainment Series	UCLA	
Hallmark Hall of Fame: Winterset	10/26/59	NBC	Color	Entertainment Special	UCLA	
Play of the Week: Back to Back: "The Dock Brief" and "What Shall We Tell Caroline?"	11/2/59	Syndicated	B/W	Entertainment Series	UCLA	
Another Evening with Fred Astaire	11/4/59	NBC	Color	Entertainment Special	UCLA	
Play of the Week: "A Month in the Country"	11/9/59	Syndicated	B/W	Entertainment Series	UCLA	
Hallmark Hall of Fame: "A Doll's House"	11/15/59	NBC	Color	Entertainment Special	UCLA	
Play of the Week: "Waltz of the Toreadors"	11/16/59	Syndicated	B/W	Entertainment Special	UCLA	
Steve Allen Plymouth Show	11/16/59	NBC	Color	Entertainment Series	Historic Films	Guest: Jack Kerouac
Milton Berle Starring in the Kraft Music Hall	11/19/59	NBC	Color	Entertainment Series	UCLA	
Pontiac Star Parade: The Gene Kelly Show	11/21/59	NBC	Color	Entertainment Special	UCLA	
Play of the Week: "White Steed"	11/23/59	Syndicated	B/W	Entertainment Series	UCLA	
Play of the Week: "Crime of Passion"	11/30/59	Syndicated	B/W	Entertainment Series	UCLA	
Play of the Week: "Simply Heavenly"	12/7/59	Syndicated	B/W	Entertainment Series	UCLA	
The Frank Sinatra Timex Show: An Afternoon with Frank Sinatra	12/13/59	ABC	B/W	Entertainment Special	UCLA	Record date: 12/10/59
Hallmark Hall of Fame: "A Christmas Festival"	12/13/59	NBC	Color	Entertainment Special	UCLA	
Play of the Week: "World of Sholem Aleichem"	12/14/59	Syndicated	B/W	Entertainment Series	UCLA	
On the Go: Sunshine Mission	12/15/59	KTLA, Los Angeles	B/W	News/Public Affairs	UCLA	

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Title	*Air (Production) Date*	*Network*	*Color?*	*Type*	*Source/Location*	*Notes*
Play of the Week: "Thieves' Carnival"	12/21/59	PBS	B/W	Entertainment Series	UCLA	
On the Go: Night Pilot	(12/23/59)	KTLA, Los Angeles	B/W	News/Public Affairs	UCLA	
Play of the Week: "The Cherry Orchard"	12/28/59	Syndicated	B/W	Entertainment Series	UCLA	
Yale Reports: Christmas and Christianity in a Shrinking World	1959	WNHC, New Haven, CT		Educational Archives	UGA/Peabody	Airdate not known
WDSU-TV News Operation	1959	WDSU, New Orleans		News/Public Affairs	UGA/Peabody Archives	Compilation
Northwest Passage to the Sea	1959	WTNC, Minneapolis		News/Public Affairs	UGA/Peabody Archives	Airdate not known
Impact: Pathways to Peace	1959	WENS Cleveland		News/Public Affairs	UGA/Peabody Archives	Airdate not known
The Priceless Gift	1959	KIRO, Seattle		News/Public Affairs	UGA/Peabody Archives	Airdate not known
Open End: This Year on Broadway	1959	Syndicated	B/W	Talk	UCLA	Airdate not known
The Mike Wallace Interview: Ethel Waters	1959	Syndicated	B/W	Talk	UCLA	Airdate not known
The Mike Wallace Interview: Sheilah Graham	1959	Syndicated	B/W	Talk	UCLA	Airdate not known
The Mike Wallace Interview: Abbe Lane	1959	Syndicated	B/W	Talk	UCLA	Airdate not known
On the Go: Children's Hospital	1959	KTLA Los Angeles	B/W	News/Public Affairs	UCLA**	Airdate not known*
David Susskind Show: This Year on Broadway	1959	Syndicated	B/W	Talk	UCLA	Airdate not known
Play of the Week [promotional video]	1959	Syndicated	B/W	Promotional	UCLA	

*"Source" does not necessarily designate location of the actual original two-inch tape. It merely indicates what archive has noted its existence. UCLA, for example, holds many programs dubbed from network two-inch tapes, which were then returned.

**UCLA holds numerous episodes of this show dated "1959–1960"; this is the only one that is specifically labeled as having been produced in 1959.

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15. Adams, "TV Network on Film," B3.
16. Karl Freund, "Shooting Live Television Shows on Film," *Journal of the Society of Motion Picture and Television Engineers,* January 1953, 9.
17. Robert O'Brien, "Magnetic Tape Reels Off Changes in Way We Live," *Life,* August 19, 1957, 74.
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22. Jack Gould, "Movies on Tape Expected in 1956," *New York Times,* July 5, 1955, 31.
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26. Ibid.
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31. O'Brien, "Magnetic Tape Reels Off Changes in Way We Live," 74.
32. "Bright Future Seen for Kinescope Recorders," *Electronics,* July 1956, 16.
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38. Howard A. Chinn, "Status of Video Tape in Broadcasting," *Journal of the Society of Motion Picture and Television Engineers,* August 1957, 153.
39. "Cinderella on Tape," *New York Times,* April 2, 1957, 52.
40. "NBC-TV Installs Ampex Recorder," *Broadcasting-Telecasting,* December 17, 1956, 66.

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45. "Color Tape's Here and RCA's Got It," *Television Digest,* October 26, 1957, 2–3.
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49. John Crosby, "Tape Is an Electronic Miracle of Significance," *Washington Post and Times Herald,* March 1, 1957, D5.
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57. Ibid.
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60. Minnesota Mining and Manufacturing Company, *The Changing Picture in Video Tape for 1959–1960: A Review for the Television Industry* (Saint Paul, MN: Minnesota Mining and Manufacturing Company, 1959), 10.
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65. Laurence Laurent, "Broadcasting Complexity Amazes Ike," *Washington Post and Times Herald,* May 23, 1958. There is a copy of the program at the Eisenhower Presidential Library in Abilene, Kansas; according to the library's records, it was donated by Robert Sarnoff in 1961. During the broadcast, Sarnoff brandishes a short piece of two-inch tape as he describes the tape copies that will be presented to the White House and the Library of Congress.

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